Status of Pinyon Pine Sawfly Infestations on
Bureau of Land Management Lands During 1966

The pinyon pine sawfly, Neodiprion edulicolus Ross, has caused serious defoliation of single needle pinyon on approximately 200,000 acres in southern Nevada during the past two years. Overall defoliation decreased this year, however, apparently due to a late frost in May that reduced the larvae population to about half the number observed in 1965. The reduction in the sawfly population will likely enable parasites, predators, and other biological factors to reduce the residual population to a tolerable level in 1967; therefore, the infestations are expected to continue to decrease in extent and intensity next year. Historically pinyon sawfly infestations in the Intermountain Region have been short lived, and widespread tree mortality has not been known to occur. A more detailed discussion of the sawfly situation by area follows:

Nores Truck Road

Defoliation averaged about 15 percent and ranged from 0 to 30 percent along the Nores Truck Road this year, as compared to 10 to 30 percent in 1965. Feeding was confined mostly to the upper crown levels. Pupal counts, taken from the duff beneath infested pinyon pine trees, averaged 3.8 in 1966 against 3.6 in 1965. Adult emergence from pupae reared in the laboratory was 8 percent in 1966 compared to 12 percent in 1965. Parasitism of the sawfly larvae by a Pteromalid parasite, Dibrachys sp. this year increased to approximately 94 percent as compared to 60 percent last year. Dissection of unemerged sawfly larvae this year showed that approximately 45 percent were parasitized by Diptera spp. These Dipterous parasites (flies) will remain in sawfly pupae until next spring or summer, then emerge and parasitize sawfly larvae.

From the data gathered, it was evident that the number of pupae per square foot did not change appreciably from 1965 to 1966. However, the number of adult sawflies that emerged decreased by one-third, and the number of sawfly larvae parasitized by Dibrachys sp. and other parasites increased by one-third.

The sawfly population could be reduced to a low level by parasites within the next year. Defoliation is expected to remain at about the same level or possibly decrease in 1967.

East Pass - Sheep Springs

Intensity of defoliation decreased in the East Pass - Sheep Springs area east of Caliente, Nevada, this year. Defoliation varied from light to heavy and averaged about 60 percent. All pinyon pines exhibited some defoliation.

Three separate evaluations were made in this area during 1966. The first examination was made on May 2, and sawfly egghatch had begun. Sawflies were reared in the laboratory from field-collected foliage bearing eggs and immature larvae. Adult sawfly emergence was high, but parasitism was low.

A second evaluation was made on May 25. Small dead larvae were found in numberous bunches on pinyon pine branches, apparently killed by the late frost. The remaining larvae were actively feeding on the pinyon pine needles. Larvae were again collected and reared in the laboratory to assess parasitism and adult emergence. All larvae collected on May 25 pupated within 10 days following collection. Approximately 80 percent of these larvae were parasitized by Hymenopterous wasps and 8 percent by Diptera spp. (flies). This rearing revealed additional larval parasitism by another wasp, Exenterus sp. It was evident, at that time, that the population which survived the late freeze was being further reduced by this parasite complex.

Because of the habits of the sawfly and difficulties of accurately sampling the larval stages, pupal populations provide more meaningful data for trend predictions. A third examination was made on July 21 to collect pupae and observe defoliation after the sawfly had ceased feeding. Pupal collections from the East Pass - Sheep Springs area showed a decrease from 1965 to 1966 of 15 to 6 pupae per square foot of duff area respectively, and adult sawfly emergence decreased from 16 to 5 percent. Larval parasitism by Dibrachys sp., did not change appreciably in 1966. About 18 percent of the larvae were parasitized by Dipterons, and approximately 5 percent died from desiccation.

From the above data, it appears that parasites are a major biological factor in controlling pinyon sawfly populations. Also, proper timing of evaluations is necessary in order to be able to accurately predict the trend of an infestation.

Beaver Dam

Intensity of defoliation decreased in the Beaver Dam infestation this year. Approximately one-third of the pinyon pines in the area were infested this year. Damage to individual trees ranged from no defoliation to about 35 percent and was confined mostly to the upper crown levels.

Egghatch was slower in the Beaver Dam area than in the East Pass - Sheep Springs area this year. Sawflies were reared in the laboratory early in May from field-collected foliage bearing eggs. Adult sawfly emergence was high and no parasites were found.

Laboratory rearings of larvae collected on May 25 showed that approximately 76 percent of the larvae were parasitized by Hymenoptera, mostly Dibrachys sp., and 9 percent by Diptera. The wasp parasite, of the genus Exenterus sp., was also parasitizing sawfly larvae on May 25, but this parasite was not as common in the Beaver Dam area as it was in the adjacent East Pass - Sheep Springs area.

On July 25, pupal counts were made, and pupae were taken to the Ogden laboratory, to determine percent larval parasitism and adult sawfly emergence.

In this area, average number of pupae per square foot of duff decreased from five in 1965 to one in 1966. Successful adult sawfly emergence was 17 percent this year. Larval parasitism this year was approximately 37 percent by Dibrachys sp., 5 percent were parasitized by Diptera, and about 28 percent died from desiccation. No parasites emerged in the 1965 rearings.

The late freeze this spring was very likely an important factor in reducing the sawfly population east of Caliente, Nevada. A similar condition was experienced in 1960 when the sawfly population along the Nores Truck Road was reduced to a low level following an unseasonal snow storm and subfreezing temperatures. Parasites were equally effective in reducing the residual population to a less damaging level.

From all indications, these infestations will decrease in severity and extent again next year.

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